

Please amend the application as follows:

In the Drawings:

Please substitute the attached replacement drawing sheet containing FIGS. 1-8 for that originally filed. The pressure sensor 58 has been shown in FIG. 5 just as it is shown in FIG. 3 (38 in FIG. 3).

In the Claims:

Please amend the claims as shown in the following listing:

REMARKS

Applicants thank the Examiner for consideration of the application, and for identification of allowable subject matter. Claims 10-67 are extant in the application, claims 10-15, 17-19, 23-46, 52, 55-60 and 62-67 were rejected. Claims 16, 20, 21, 50-52 and 54 were objected to as dependent on rejected base claims, but indicated as otherwise allowable. Applicants have amended the application and will otherwise address the concerns raised by the Examiner by this communication. The discussion will be primarily directed to the rejections of the independent claims, as the dependent claims, being more narrow in scope, are allowable if the base claims in each case are allowable, assuming that all matters of form are also addressed with respect to these claims.

Drawing Objections

The Examiner correctly notes that the reference number 58 does not appear in the drawings. Reference numbers ending in “8” throughout the specification refer to sensors. The numeral of each reference number refers to the figure number. Thus, reference number 38 is a sensor in FIG. 3, and reference number 58 would be a sensor in FIG. 5, for example. A pressure sensor located in the buffer volume is shown in FIG. 3, duly referenced by number “38.” However, this was inadvertently not shown in FIG. 5, though a pressure sensor “58” in the buffer volume is called out in the written description referring to FIG. 5. A replacement sheet wherein FIG. 5 has been amended to show the element is attached. Note that it is shown just as it is shown in FIG. 3. Thus in the amendment new matter has not been added, as the pressure sensor in the buffer volume element (58) referenced was shown in the drawings in another example (38), and that same representation is used in FIG. 5 as amended.

Claim rejections:

Rejections under 35 U.S.C. §112:

Claim 61 stands rejected under the first paragraph of section 112, on the ground that a watch, mobile telephone, remote control, pen, spectacles, jewelry, bank card, keyboard, screen, key ring, toy, household item, hearing aid, or other component incorporating a sound generator and having a dead volume useable as a buffer volume, are not described in the specification. Applicants respectfully remind that the claims themselves are a part of the disclosure of the application, and

that things commonly known to those skilled in the art do not need to be described in detail. The concept of common devices which have or may be provided with a hollow space, or in other words a dead interior volume, is one which needs no explanation to those skilled in the art, nor indeed to lay persons of average intelligence and experience. If the burden of the rejection is that this language should also appear in the detailed description, not just in the claims, applicant would be willing to amend the application, and would welcome the Examiner's suggestions as to where the claim language could be essentially copied over and inserted in a manner most acceptable to the Office. Such an addition would be essentially the same language transferred over from the claims, and thus not new matter. Such dead space volumes are shown schematically in numerous drawing figures. Applicant also reminds that commonly known and understood things can be shown schematically, or even as a "black box" with no detail whatsoever, in the drawing figures, as provided in the relevant rules.

Likewise, claim 47 stands rejected, but the concept as set forth in the claim is well known to persons skilled in the art, and as mentioned by the Examiner it is illustrated in the drawing figures. Applicant likewise offers as corrective action the copying of the language of the claim over into the specification, but would appreciate the Office's recommendation as to how best to do that to the satisfaction of the Office.

Claims 23 and 61 were rejected under the first paragraph of section 112 due to the use of the alternate language "and/or" in the claims. The claims have been amended to address this concern.

Rejections under 35 U.S.C. §102:

Independent claims 10, 65, 66, and 67 were rejected under section 102 as anticipated by Doi, et al., U.S. Pat No. 4,194,095 ("Doi"). With respect to claims 10 and 67, the apparatus disclosed in the Doi reference appears from the drawing figures and written description taken as a whole to be configured so that it only approaches (but likely does not reach) zero net direct volume fluid flow when no sound is being reproduced (in that mode most fluid is directed through the return pipe 12 and re-circulated by the pump fan 14 through the chamber 10 through the return pipes 11 from each horn 9 throat 2, again to the pipe 12 for re-circulation. When sound is being reproduced, however, there is net flow because the fluid exiting out through the horns 9 must be replaced, requiring the drawing of additional fluid through the fan 14 from the environment through the inlet 13 (which fluid is then in turn expelled from the horns 9 as well).

The specification language referenced by the Examiner in making the rejection appears to be flawed by a typographical error. The throat portion(s) are elsewhere called out by reference number 2 (or 2a, 2b, or 2c), whereas the reference number 4 otherwise is called out in association with an “outlet” of the throat 2 into the neck (9’) of exponential horn flare (9). It appears the wrong reference number was used at the place cited. Close examination of the drawing figure and the text of the specification reveals that the functionality described (with the error uncorrected) cannot (it appears) occur, as fluid directed into the outlets (4) leaves the system, and is not (again best interpretation of the disclosure) to be returned. Based on what appears in the drawing and text, the logical, and likely, intent of the author of the Doi disclosure on this point is that the fluid that is directed into the throats (2) *can* in each case be returned (which would occur when fluid is directed through the lower channels of the throats (2c), instead of out of the upper channels (2b), outlets (4) and horns (9)) when no ‘positive phase sound pressure’ is being produced (to use the mode of language of the reference). In fact, taking the disclosure as a whole, it appears that the Doi device creates a modulated airstream (a net fluid volume flow modulated with the acoustic signal); and, that reverse flows back through the outlets, if they occur at all (which appears unlikely), are less in volume than the forward flows out through the outlets during sound generation. This net flow is required to create “the output analog flow signal” and produce “no reverse phase sound pressure” referenced in the abstract and objects, respectively, for example.

In short, a PCM signal is used directly to modulate a fluid air stream by directing it either to the outlet or to the return path through the drain pipe 11 to the common drain duct 12 and thereby to the compression pump 14 for return, and the output volume air flow gives rise to the sound pressure level (“positive phase”) and this flow can go down to about zero, but must vary between about zero and higher values. Accordingly, a net through volume flow of air occurs attendant sound generation. The net volume flow of the Doi device cannot be zero and have sound generation occur, as sound is only generated when there is a positive net volume airflow.

In contrast, claim 10 sets forth: “the direct flow component of the fluid volume flow being zero.” In other words the volume flow producing the output acoustic waveform of the combination as is set forth is to be about as much in negative values as positive values, given a long sample time period, and sum to zero. Moreover, the acoustic output will have a “reverse phase sound pressure” (to counter in turn the positive phase sound pressure of each succeeding wave to give the resultant net zero volume flow) this is opposite of the teaching of the Doi disclosure. Thus, at least one

element of the claim is not met in the disclosure of Doi, and the reference does not anticipate the present invention as set forth in claim 10.

Claim 67 sets forth the same element of no net volume flow just discussed with respect to claim 10. Therefore this claim is also not anticipated by Doi for at least the same reasons.

With regard to the rejection of claim 65 as anticipated by Doi, the rejection is not understood, as the output of the speaker emanates from the horn flared portions (9) (whereas in the next paragraph the Examiner refers to these as “inlets”) to the environment, which environment is not acoustically separated from the intake opening (13) extending inward from the same environment. This inlet space puzzlingly is claimed by the Examiner to be a distinct volume acoustically separated from the speaker horn(s) 9. Therefore, applicant cannot follow the Examiner’s reasoning entirely, as it appears to be based on incorrect assumptions. It will be appreciated, for example, that acoustic signals from the horns are free to propagate through the environment and into the inlet. Reconsideration, clarification, or withdrawal of the rejection appears to be needed. If applicants have not fully understood the rejection, it is earnestly posited that it is because the language used is inconsistent with the teachings of the reference relied upon.

Insofar as Applicants can respond to the rejection, it is respectfully submitted that the element of three acoustically separated volumes is not met, and therefore the reference does not anticipate the combination set forth in the claim for at least that reason.

Applicants are likewise unable to understand the rejection of claim 66 as anticipated by the Doi reference. The Examiner appears to be under a misapprehension with regard to the inlet, as mentioned. The structure cited as a waveguide (9’) between the “inlet” and the “output of the speaker” by the Examiner is in fact the neck (col. 3 line 46) of the exponential horn (col. 3 line 47), and thus on the opposite side of structure called out by reference number 9 from where the “output of the speaker” would be. Thus the Examiner may have misapprehended the teachings of the reference, and this is most regrettable, as applicant does not know for sure whether this is a mistake, or thus how best to respond.

Moreover, the elements called out as a “vibrational exciter” by the Examiner are the valves and air passages which are clearly taught to operate as controlled by the PCM signal, which operation is not vibrational. Instead this structure is taught to operate to build up the waveform of the output by remaining at a particular state or changing state in each succeeding time increment (not back and forth in a vibrational sense, but more like the mathematical derivative of a back and